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UDC 620.193.5:546.623-31:546.45-31

USSR

BUDNIKOV, P. P., BELYAYEV, R. A., VOLODIN, P. L., RAKHALIN, N. A., FURAYEV, V. A., and TUMBAKOVA, M. I.

"The Corrosion of Aluminum and Beryllium Oxides in Gaseous Ammonia at 200-800°C"

Leningrad, Zhurnal Prikladnoy Khimii, Vol XLIV, No 1, Jan 71, pp 54-59

Abstract: Data on the corrosion resistance of fused samples of beryllium and aluminum oxides in gaseous ammonia are virtually absent in the literature.

This study deals with liquid synthetic ammonia, Grade 1, GOST 6221-52, 99.94% pure, and 99.5% pure beryllium oxide with a specific surface of 4.5 m<sup>2</sup>/g. After processing, samples were placed in streams of ammonia gas at various temperatures and flow rates, for various periods (200-800°C; 7.5-12.8 m/sec; 3-10 hr). After each test the ammonia gas was checked for decomposition, which might occur at high temperatures.

Gravimetric, metallographic and electron-microscope studies of the surface, revealed no corrosion of either oxide in the 200-800°C range. An ammonia

USSR

BUDNIKOV, P. P., et al., Zhurnal Prikladnoy Khimii, Vol XLIV, No 1, Jan 71,  
pp 54-59.

gas flow of 10 m/sec had neither a corrosive nor an erosive effect in the  
250-350°C range.

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USSR

UDC 612.017.12:612.461.269.014.482

RUBACHEV, I. G., STREL'NIKOV, V. A., FEDOROVA, T. A., ~~KLEMPARSKAYA, N. N.~~,  
DUKHOVNAYA, E. M., and FURAYEVA, L. P.

"The Effects of Irradiation on the Urinary Excretion of Thymidine and Beta-Aminoisobutyric Acid in Immunized Rats"

Moscow, Zhurnal Mikrobiologii, Epidemiologii i Immunibiologii, Vol 10, Oct 70,  
p 142

Translation: Whole-body irradiation of animals induces massive decomposition of desoxynucleoproteins and liberation and depolymerization of DNA in the cells of organs sensitive to irradiation. At the same time, there is an increased urinary excretion of desoxynucleosides -- desoxycytidine and thymidine, and of the products of thymidine catabolism -- beta-aminoisobutyric acid. A study of the dynamics of the excretion of these substances makes it possible to elucidate the nature of DNA metabolism in the body during the 1st day after irradiation and, during the subsequent period, the nature of restoration processes taking place in the rapidly regenerating tissues.

In a previous study, we established that after active immunization, rats have an increased urinary excretion of beta-aminoisobutyric acid, especially during  
1/3

USSR

RUBACHEV, I. G., et al, Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, Vol 10, Oct 70, p 142

the period of maximum concentration of agglutinins in peripheral blood, and a decreased concentration of plasmocytes in the lymph nodes. In this investigation, we studied the level of DNA decomposition (based on the urinary excretion of thymidine and beta-aminoisobutyric acid) and the dynamics of the formation of antibodies (according to the titers of agglutinins) in vaccinated and irradiated rats. The animals received a single dose of whole-body irradiation (500 r) from the EEGO-2 generator (power, 640 r/min; gamma rays, Co<sup>60</sup>) 48 hours prior to and 48 hours after vaccination. Immunization was performed with Breslau bacilli killed with heat, which were administered intramuscularly in a dose of 1 billion microbial cells in 0.5 ml. Irradiation prior to and after immunization equally suppressed the formation of agglutinins (approximately three times). During the 1st day after irradiation, the level of thymidine excretion in controls, and immunized animals also increased to an equal degree (5 and 2.5-3 times, respectively). This fact and the equivalent degree of inhibition of antibody formation indicated that immunization performed 48 hours prior to irradiation exerted no protective effects on the

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USSR

RUBACHEV, I. G., et al, Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, Vol 10, Oct 70, p 142

decomposition of lymphoid tissue during the 1st day after irradiation or on its ability to produce antibodies. Subsequently, the level of thymidine excretion by control animals and those of the experimental group differed considerably from the standpoint of excretion of beta-aminoisobutyric acid (these differences were insignificant). During the subsequent period (up to 11 days), irradiated control animals displayed a considerable decrease (3-5 times) in thymidine excretion as compared to the initial level. Normal or above-normal thymidine excretion was observed on the 7th-11th days after immunization in animals immunized after irradiation, and on the 2nd-6th days after irradiation or on the 4th-8th days after immunization in animals immunized prior to irradiation. This development may be associated with regenerative processes which apparently begin earlier and proceed at a more rapid rate.

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UDC 623.933:621.395

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USSR

DZERZHINSKIY, I.V., ZHAROVA, N.A., PRIBEDKO, V.P., FOMINA, I.P., ~~SHREYEV~~  
A.V.

"Deep-Water Nine-Channel System Of Hydrophones"

Tr. Akust. in-iz (Works Of The Institute Of Acoustics), 1971, No 16, pp 5-15  
(from RZh:Elektronika i yeye primeneniye, No 1, Jan 72, Abstract No 1A441)

Translation: A deep-water system of hydrophones is described which assures simultaneous reception of acoustic signals at nine levels at depths up to 1.5 km in the frequency range from 2 Hz to 6 kHz with a dynamic range of 50 db. With the object of increasing the reliability and simplifying the transmitting device, a system of frequency modulation is used with an uncontrolled center band. Automatic frequency control of the oscillators is incorporated in the receiving device. The lowering devices are distinguished only by the central frequencies and the frequencies of the remote control of the attenuators. A nondirectional cylindrical hydrophone of barium titanate with self-capacitance of 680 picofarad and a sensitivity of 80 microvolt/bar is used as the signal source. Connection of the signal sources is accomplished by a generator circuit. The noise level in the line because of discontinuities does not exceed that permissible. In the system of hydrophones a type LK1-7 cable-hawser is used which has three high-frequency coaxial cores with a wave impedance of 15 ohm and four insulated steel hawsers. 6 ill. 4 ref. L.A.

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USSR

UDC 615.37:[576.858.095.383:611-018.35

SHCHERBAKOVA, E. G., EYDEL'SHEYN, S. I., and FURER, N. M., Laboratory for New Antibiotics and Other Natural Compounds, Department of Microbiology, Central Institute for the Advanced Training of Physicians, Moscow

"Pharmacological Studies on Human Leukocyte Interferon"

Moscow, Antibiotiki, Vol 18, No 3, 1973, pp 256-259

Abstract: Studies were conducted on cats, rabbits, mice, and dogs to determine possible toxic effects of human leukocyte interferon (HLI). Acute toxicity studies were conducted on 18-20 g mice and 1.5-2.0 kg rabbits, employing HLI with activities of 1200-1500 units/ml; intravenous (iv) injections of 1 ml to mice and 1-5 ml/kg to rabbits were well tolerated and did not result in any abnormal changes. When HLI was administered to dogs, 5-10 ml/kg, iv, there were no changes in respiration, pulse rate, or in the EKG. The iv administration of HLI, 1 ml/kg, to rabbits did not elicit any pyrogenic effects. When HLI was administered iv to cats under urethan anesthesia there were no significant changes in the arterial blood pressure; the insignificant hypotension that was observed was less than that elicited by 0.1  $\mu$ g/kg of histamine. Intracutaneous administration of 0.1 ml to rabbits did not evoke necrosis or infiltration. Subconjunctival administration of HLI (0.1-0.5 ml) in rabbits resulted in limited hyperemia and insignificant edema, all signs of which disappeared by 1/2

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SHCHERBAKOVA, E. G., et al., Antibiotiki, Vol 18, No 3, 1973, pp 256-259

24 h. HLI was found to increase the ciliary activity of kitten trachea, which may be regarded as a favorable sign that would lead to more rapid elimination of respiratory viruses. Chronic studies on 18-20 g mice receiving 0.25 ml of HLI daily subcutaneously for 3 weeks did not elicit any local changes or differences in weight or behavior in comparison with control animals. Similarly, no negative effects were noted in rabbits on iv administration of HLI at a dose of 1 ml/kg daily for 2 weeks; blood studies were normal. Autopsies of mice and rabbits did not show any pathologic changes in any of the organs. Daily instillation of 0.1 ml of HLI into the conjunctival sac of rabbits did not evoke any changes in the epithelium or the cornea. The administration of 0.5 ml into each nasal passage of 15-20 g mice (t.i.d for 5 days) was without adverse effects on the mucous membrane or the respiratory system. Thus, on the basis of histological and pharmacological studies, HLI has been shown to be completely nontoxic and without adverse effects on the growth and development of young animals.

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- 33 -



USSR

UDC 616.288.75+616.2-036.11]-053.2-085.339:576.858]-039.71

YERMOL'YEVA, Z. V., BLINOVA, M. I., FURER, N. M., RITOVA, V. V., KUCHERENKO, L. P., NEMIROVSKAYA, B. M., SHCHERBAKOVA, E. G., SCHASTNYI, E. I., ORLOVA, L. N., and FAYNSHTEYN, S. L., Chair of Microbiology, Central Institute for Advanced Training of Physicians, and Institute of Virology imeni D. I. Ivanovskiy, USSR Academy of Medical Sciences, Moscow

"Prophylaxis of Influenza and Other Acute Respiratory Diseases Among Children Through Administration of Leukocytic Interferon and a Stimulant of Interferon Production (UF Virus)"

Moscow, Voprosy Virusologii, No 4, Jul/Aug 71, pp 442-446

Abstract: An express method of preventing influenza and other acute respiratory diseases was tested in childrens' institutions in Moscow during the interepidemic period of March-June 1968 and during the influenza epidemic in January-February 1969. The project was carried out under strictly controlled, coded experimental conditions. The 750 children, aged 10 months to 7 years, were divided into four groups at random, and the preventive agents were administered intranasally. One group received leukocytic interferon two times per day for 7 to 42 days. The second group received interferon with liquid ecmoline. The third group received UF virus once daily for 3-4 days with

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YERMOL'YEVA, Z. V., et al, Voprosy Virusologii, No 4, Jul/Aug 71, pp 442-446

intervals of 3-4 days. The fourth group received placebos. The effectiveness index of interferon was 3.0 (frequency of diseases three times smaller than in the placebo group) in the interepidemic period and 2.2 during the epidemic. The effectiveness index of interferon with ecmoline was 1.8, and that of U<sub>2</sub> virus was 3.0 in the interepidemic period. All differences are statistically significant. Since no toxic effects were observed, the method is recommended for the prevention of influenza and other acute respiratory diseases.

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- 85 -

Acc. Nr.: **AP0029494**

**F**  
Ref. Code: UR 0297

PRIMARY SOURCE: Antibiotiki, 1970, Vol 15, Nr 1, pp 52-55

EFFECT OF EXOGENIC AND ENDOGENIC INTERFERONE ON LEUKEMIA  
INDUCES BY FREND VIRUS IN MICE

M. K. Sabashvili, N. M. Furer

Central Institute for Hematology and Blood Transfusion, Central Post Graduate Medical  
Institute, Moscow

1/2  
The effect of exogenic interferon and its combination with endogenic interferone on leukemia Freund in mice (line BALB/c) was studied. The effect of the drugs was estimated by the average weight of the spleens. Exogenic interferone produced in a culture of L cells of mice was administered intraperitoneally 3 hours before or 24 hours after the inoculation, followed by daily injections in a dose of 0.5 ml. Prodigiosan, a lipopolysaccharide administered intraperitoneally in a dose of 20 µg/mouse 8 hours before the inoculation and then once every 3 days was used as a stimulator of endogenic interferone. On use of a combination of exogenic and endogenic interferones, prodigiosan was administered according to the same scheme, with administration of exogenic interferone in a dose of 0.5 ml in the intervals. When interferone was administered 3 hours before the inoculation, a statistically reliable suppression of splenomegalia was observed.

REEL/FRAME

**19681094**

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AP0029494

The average weight of the spleens in the control was 1.915 gm, while after the treatment with interferone it was 1.205 gm. Administration of interferone after the inoculation was not effective. On the use of prodigiosan the average weight of the spleens was 1.238 gm. Combination of endogenic and exogenic interferones produced the best results. The average weight of the spleens after the combined treatment was 0.656 gm against 1.915 gm in the control.

*gm*

*2/2*

19681095

USSR

UDC 547.539:547.241

YAKOBSON, G. G., FURIN, G. G., TERENT'EVA, T. V., Novosibirsk Institute of Organic Chemistry of the USSR Academy of Sciences, Siberian Branch, and the Novosibirsk State University

"Aromatic Fluorine Derivatives. LI. Preparation and Reactions of Polyfluoro Aromatic Difluorophosphines and Tetrafluorophosphoranes"

Leningrad, Russian, Zhurnal Organicheskoi Khimii, vol 9, No 8, Aug 73, pp 1707-1713

Abstract: A method was developed for making polyfluorodichlorophosphines by the reaction of polyfluoro aromatic compounds with  $PCl_3$  in the presence of  $AlCl_3$ . Pentafluorophenyltetrafluorophosphorane was formed in the reaction of pentafluorophenylmagnesium bromide with  $PCl_5$ . Study of the action of nucleophilic agents on pentafluorophenyltetrafluorophosphoranes showed that nucleophilic displacement occurs at the P atom and the corresponding phosphinic salt is formed. Experimental data on the preparations and the properties of the compounds formed are listed.

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- 38 -

Acc. Nr:

AP0053773

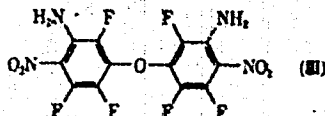
Abstracting Service

CHEMICAL ABST.

Ref. Code:

UR0366

110946g Aromatic fluoro derivatives. XXXVIII. Derivatives of polyfluorodiphenyl ether. Kobrina, L. S.; Furin, G. G.; Yakobson, G. G. (Novosibirsk. Inst. Org. Khim., Novosibirsk, USSR). *Zh. Org. Khim.* 1970, 6(2), 340-5 (Russ). The reaction of  $(C_6Cl_5)_2O$  with KF in an autoclave did not give the expected  $(C_6F_5)_2O$ ; only  $C_6F_5$ ,  $C_6F_5Cl$ ,  $C_6F_5Cl_2$ ,  $C_6F_5Cl_3$ , and  $C_6F_5Cl_4$  were obtained. The same products were obtained from  $C_6Cl_5$ . The reaction of  $C_6F_5NO_2$  with 2,3,5,6,4-F<sub>4</sub>XC<sub>4</sub>OK (X is Me, H, Br, CF<sub>3</sub>, NO<sub>2</sub>) gave 46-80% 2,3,5,6,4-F<sub>4</sub>XC<sub>4</sub>OC<sub>6</sub>(NO<sub>2</sub>)F<sub>5</sub>, 4,2,3,5,6 which were reduced to the corresponding amino-derivs. The amino derivs. were aminated to diamino ethers. The oxidn. of 4,4'-diaminooctafluorodiphenyl ether (I) with CF<sub>3</sub>CO<sub>2</sub>H gave 4,4'-dinitrooctafluorodiphenyl ether (II), which was reacted with NH<sub>3</sub>(g) to the 3,3'-diamino analog (III) of II. The redn. of III gave 3,3',4,4'-tetraaminohexafluorodiphenyl ether.



4-Bromononafluorodiphenyl ether or 4,4'-dibromooctafluorodiphenyl ether were also prepd. from 4-aminononafluorodiphenyl or I, resp., via the Sandmeyer reaction.

CPJR

REEL/FRAME  
19830836

USSR

UDC 536.46+534.29

DOROSHENKO, V. YE., FURLETOV, V. I., Moscow

"Stroboscopic Study of the Effect of Standing Sound Waves on a Turbulent Flame"

Novosibirsk, Fizika goreniya i vzryva, Vol 8, No 3, 1972, pp 388-393

Abstract: A study was made of the acoustic effect on a flame in connection with discovering the nature of vibration and turbulent combustion. An experiment was performed with a burner with a central channel and two lateral channels. The object of the study was the central flame protected by the lateral flames from mixing with the surrounding air. The plane-parallel structure of the flow was insured by cooled walls with quartz windows. The temperature of the uniform gasoline-air mixture was 483° K. A transverse standing sound wave was created by two 10GRD-5 loud speakers. They were installed opposite each other on both sides of the flame. The stroboscopic method of investigation is described. A small series of experiments were also performed with axisymmetric flames on a burner in which the central slot was replaced by three cylindrical channels 16 mm in diameter and 149 mm long.

The shape of the turbulent motion depends on the position of the flame in the field of the standing sound wave. At the pressure antinode, eddies are formed which are arranged symmetrically with respect to the central line of the planar flame; at the pressure node, they are arranged antisymmetrically. The  
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DOROSHENKO, V. YE., et al., Fizika goreniya i vzryva, Vol 8, No 3, 1972, pp 388-393

intensity and phase of the eddy formation in the flame at the pressure antinode of the standing wave depends essentially on the acoustic properties of the channel from which the hot mixture comes. A scheme is proposed for periodic occurrence of the eddies in the flame under the effect of a pure tone.

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- 153 -



AA0043572 FURMAKOV YE.F. UR 0482

Soviet Inventions Illustrated, Section II Electrical, Derwent,

2/70

243863 FLOWMETER for determining the flow of liquid, gas or steam comprises an electric winding, a ferromagnetic shaft and a turning element such as a rotating impeller, which absorbs the dynamic pressure of liquid. The modified flowmeter is of a simpler design, since its signal receiving block is in the form of an electric winding connected to a source of AC of sonic frequency, or to a measuring device, depending on the connection of the ferromagnetic shaft.

The rotary vanes are fixed to the ends of the ferromagnetic shaft 2, which passes through winding 3 with conductors 4. The shaft ends are connected to current conductors 5. Shaft 2 is fixed to housing 6.

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19762035

AA0043572

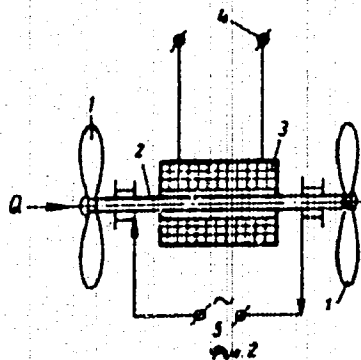
Under the action of the flow, the vane wheel turns to turn and turns shaft 2. In event of connecting conductor 4 of winding 3 to the feed of 14 to 25 h. of sonic frequency on the clamps of the conductors 5 of shaft 2 an outgoing signal proportional to the flow goes into action.

28.2.68 as 1221403/18-10. N. K. GOLUBEV & <sup>V</sup>E. F. FURMAN-  
OV. (30.9.69) Bul 17/14.9.69. Class 42e. Int. Cl.  
G 01f.

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19762036

AA0043572



19762037

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28

USSR

UDC 659.71.053.4(088.8)

PEREVOSKIN, YU. L., FURMAN, A. A., KOGAN, V. M., VAKSMAN, P. A.,  
and KARTALOV, B. V.

"Method for Preparing Solutions of Basic Aluminum Chlorides"

USSR Author's Certificate No 260624, filed 29 Feb 68, published  
5 May 70 (from RZh-Metallurgiya, No 11, Nov 70, Abstract No 11  
G106)

Translation: A method is proposed for the preparation of solu-  
tions of basic Al chlorides by mixing  $Al(OH)_3$  with HCl and  
subsequent neutralization of the obtained solution. To increase  
the purity of product, the neutralization of the solution is  
conducted with metallic Al in quantities, which ensure formation  
of the basic Al chlorides of the composition  $Al_n(OH)_{3n-1}Cl$ , where  
 $n = 1-3$ .

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1/2 007 UNCLASSIFIED PROCESSING DATE--18SEP70  
TITLE--SEPARATION OF SODIUM SULFATE FROM CONCENTRATED SULFATE BRINES BY  
HEATING -U-  
AUTHOR-(05)-BORODULINA, YE.K., GORELOVA, V.A., SPEKTOR, I.E., FURMAN,  
A.A., VOROPANOV, V.S.  
COUNTRY OF INFO--USSR  
SOURCE--KHIM. PROM. (MOSCOW) 1970, 46(1), 38-40  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--CHEMICAL SEPARATION, SODIUM HYDROXIDE, SODIUM CHLORIDE, SODIUM  
SULFATE  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--1985/1642 STEP NO--UR/0064/70/046/001/0039/0040  
CIRC ACCESSION NO--AP0101697  
UNCLASSIFIED

2/2 007

UNCLASSIFIED

PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0101697

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. CONCD. SULFATE BRINES FROM  
ELECTROLYTIC NAOH MANUFG. PLANTS CONTAIN NA CL 22.0 TO 2.5, NA SUB2 SO  
SUB4 6 TO 7, AND NA OH 0.5 TO 1.5PERCENT; AS A RESULT OF EVAPN. OF 5 TO  
7.5PERCENT OF THE H SUB2 O (BY HEATING TO 100PERCENT) UP TO 40PERCENT OF  
THE NA SUB2 SO SUB4 IS PPTD. AS A SOLID (CONTG. NO NA CL). EVAPN. OF A  
LARGER FRACTION OF THE H SUB2 O RESULTS IN A HIGHER DEGREE OF EXTN. OF  
NA SUB2 SO SUB4 WITH THE PPT. BUT IN THAT CASE THE PPT. CONTAINS  
SUBSTANTIAL AMTS. OF NA CL. EVAPN. OF

A1234

UNCLASSIFIED

1/2 007 UNCLASSIFIED PROCESSING DATE--02OCT70  
TITLE--PREPARATION OF SOLUTIONS OF BASIC ALUMINUM CHLORIDES -U-  
AUTHOR--(05)-PEREVOZKIN, YU.L., FURMAN, A.A., KOGAN, V.M., VAKSMAN, P.A.,  
KARTALOV, B.V.  
COUNTRY OF INFO--USSR  
SOURCE--U.S.S.R. 260,624  
REFERENCE--OTKRYTIYA, IZJBRET., PROM. OBRATZSY, TOVARNYE ZNAKI 1970 47(4)  
DATE PUBLISHED--06JAN70  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--CHEMICAL PATENT, ALUMINUM HYDROXIDE, ALUMINUM CHLORIDE,  
AQUEOUS SOLUTION  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--1993/0030 STEP NO--JR/0482/70/000/000/0000/0000  
CIRC ACCESSION NO--AA0113030

UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--02OCT70

CIRC ACCESSION NO--AA0113030

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. SOLNS. OF BASIC AL CHLORIDES WERE  
PREPD. BY MIXING  $Al(OH)_3$  WITH HCL AND NEUTRALIZING THE RESULTING  
SOLN. WITH ENOUGH METALLIC AL TO GUARANTEE THE FORMATION OF  $Al_3N_4$  (OH)  
 $Al_3N_4-1$  CL, WHERE N WAS 1-3.

89

UNCLASSIFIED



1/2 009 UNCLASSIFIED PROCESSING DATE--13NOV70  
TITLE--REACTION OF FERRIC CHLORIDE WITH FERRIC OXIDE -U-  
AUTHOR--(02)-LATINA, Z.I., FURMAN, A.A.  
COUNTRY OF INFO--USSR  
SOURCE--ZH. PRIKL. KHIM. (LENINGRAD) 1970, 43(4), 830-4  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--IRON COMPOUND, CHLORIDE, CHLORINATION, CHEMICAL REACTION,  
METAL OXIDE  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--1999/1064 STEP NO--UR/0080/70/043/004/0830/0834  
CIRC ACCESSION NO--AP0123057  
UNCLASSIFIED

2/2 009

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0123057

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. FECL SUB3 CAN BEST BE USED AS A CHLORINATING AGENT AT LARGER THAN 500DEGREES SINCE AT LOWER TEMPS. (225-433DEGREES) IT IS PARTIALLY PRESENT AS FECL DUE TO THE REACTION WITH FE SUB2 O SUB3 PRESENT. AT 500DEGREES THE THERMAL DECOMPN. OF FECL IS COMPLETE.

UNCLASSIFIED

USSR

UDC 621.315.592(038.8)

VERZIN, I. I., PAYKIN, I. M., POPOV, N. R., SURETIN, O. N., FURMAN, B. A.

"Device for Compensation of Axial Play of the Priming Rod of Furnaces for Growing Single Crystals"

USSR Author's Certificate No 275412, Filed 1 Dec 67, Published 14 Oct 70  
(from RZh-Metallurgiya, No 4, Apr 71, Abstract No 46479P)

Translation: A device for compensation for axial play of the priming rod of furnaces for growing single crystals contains a system for regulating the speed of the drive which displaces the priming rod. To decrease the axial play in the translational motion of the priming rod occurring during its rotation, an inductive displacement transducer is introduced, the moving part of which is rigidly connected to the priming rod. The stationary part is connected to the carriage on which the inoculation rod is mounted, and the output of which is connected to the input of the speed regulator of the drive for displacing the priming rod.

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1/2 011 UNCLASSIFIED PROCESSING DATE--27NOV70  
TITLE--PREPARATION AND ATTEMPTED SEPARATION OF EXO AND  
ENDO,1,3,DIMETHYLBICYCLO,2.2.1,HEPTANES -U-  
AUTHOR-(04)-KOVALENKO, L.I., FURMAN, D.B., BELIKOVA, N.A., LIBERMAN, A.L.  
COUNTRY OF INFO--USSR  
SOURCE--NEFTEKHIMIYA 1970, 10(2), 161-4  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--CYCLOALKANE HYDROCARBON, HEPTANE, KETONE, ALKYL RADICAL,  
ISOMER, THIOUREA, CHEMICAL SEPARATION, MOLECULAR STRUCTURE  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--3006/0906 STEP NO--UR/0204/70/010/002/0161/0164  
CIRC ACCESSION NO--AP0134635  
UNCLASSIFIED

2/2 011

UNCLASSIFIED

PROCESSING DATE--27NOV78

CIRC ACCESSION NO--AP0134635

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE TITLE COMPODS. WERE SYNTHESIZED FROM THE CORRESPONDING HEPTANONES BY TREATMENT WITH N SUB2 H SUB4 .H SUB2 O, DIETHYLENE GLYCOL, KOH, REFLUXING THE MIXT., AND DISTG. THE HYDROCARBON AND H SUB2 O FORMED. A MIXT. OF EXO AND ENDO,2,METHYLBICYCLO(2.2.1) HEPTANE WAS METHYLENATED. TO DECIDE WHETHER THE HIGHER OR LOWER BOILING COMPOD, WAS EXO. THE LOW BOILING COMPODS. OBTAINED HAD THE EXO CONFIGURATION. THE STEREO ISOMERS WERE SEPD. BY FRONTAL METHOD WITH THIOUREA. FACILITY: KHIM. FAK., MOSK. GOS. UNIV. IM. LOMONOSOVA, MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC 533.6.013.42

FURMAN, F. A.

"Vibrations of Volumetric Hydrotransmissions With Long Connected Lines"

V sb. Mekh. mashin. Vyp. 37-38 (Machine Mechanics. No. 37-38 -- Collection of Works), Moscow, "Nauka", 1972, pp 95-105 (from RZh-Mekhanika, No 3, Mar 73, Abstract No 3V414)

Translation: The problem of the dynamic interaction of a working liquid with movable mechanical links of a hydraulic transmission in the presence of high-frequency disturbances is formulated and analyzed. Also analyzed are the dynamic characteristics of certain mechanisms of hydraulic machines. An approximate solution is obtained for the equations for the combined oscillations of hydraulic transmissions with long lines under multifrequency excitation. The stability of oscillations of the moving portion of an axial-piston pump and the resonance characteristics of drain valves are analyzed. 8 ref. Author's abstract.

1/1

Combustion

USSR

UDC 541.126:547.211

BASEVICH, V. YA., KOGARKO, S. M., and FURMAN, G. A., Institute of Chemical Physics, Academy of Sciences USSR

"Mechanism of Methane Combustion. 2 Communication. 'Uni-Dimensional' Atomic Flame"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 10, Oct 71, pp 21-91-2196

Abstract: To obtain complete data on the combustion of methane, the atomic flame method was utilized. In the course of the experiments it was determined that  $\text{CO}_2$  may form in considerable quantities under conditions when the CO added artificially to the methane remains practically unchanged. Hence a route for the appearance of  $\text{CO}_2$  is postulated by-passing the stage of CO formation. Combustion of an atomic flame, especially in case of a "coaxial" system is a very complex process in which during the initial stage the crucial role is played by radial and axial diffusion and heat transfer. The composition of combustion products in an active flame was determined and reported in relative concentrations, giving satisfactory agreement between the theoretical and experimental values. The lack of experimental data makes it impossible to select precisely the mechanism for the combustion of methane.

1/2

USSR

BASEVICH, V. YA., et al., Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 10, Oct 71, pp 2191-2196

A mechanism based on uni-dimensional flame has been derived, which agreed with observed data: lowering of the temperature decreases the reaction depth, increase in the concentration of  $[O]_0$  with constant  $[CH_4]_0$  or decrease in  $[CH_4]_0$  concentration with constant  $[O]_0$  results in more complete combustion; decrease in  $[O_2]_0$  concentration is accompanied by an increased production of  $[H_2]$  and  $[CO]$ .

2/2

- 4 -



172 026 UNCLASSIFIED PROCESSING DATE--11SEP70  
TITLE--CONDITIONS FOR CARBOXYNITROLIC ACID FORMATION DURING THE NITRIC  
ACID OXIDATION OF CYCLOHEXANOL -U-  
AUTHOR--TRUBNIKOVA, V.I., PREOBRAZHEVSKIY, V.A., GOLDMAN, A.M., FURMAN,  
M.S., KOSTINA, V.N.  
COUNTRY OF INFO--USSR  
SOURCE--KHIM. PROM. (MOSCOW) 1970, 46(1), 12-14  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--NITRIC ACID, OXIDATION, CYCLOHEXANOL, CARBOXYL RADICAL,  
CHEMICAL REACTION RATE, ACTIVATION ENERGY  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--1985/1453 STEP NO--UR/0064/70/046/001/0012/0014  
CIPC ACCESSION NO--AP0101539

UNCLASSIFIED

2/2 026

UNCLASSIFIED

PROCESSING DATE--11SEP70

CIRC ACCESSION NO--AP0101539

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A CYCLOHEXANOL (I) 57PERCENT HNO  
SUB3 MIXT. (MOLE RATIO 1:7) WAS AGITATED (BY BUBBLING N) 1 TO 30 MIN AT  
35DEGREES; THE CONCN. OF CARBOXYNITROLIC ACID HO SUB2 C (CH SUB2) SUB4 C  
(:NOH) NO SUB2 (II) IN THE MIXT. INCREASED FROM 0.48 M AFTER 1.9 MIN TO  
0.685 M AFTER 10.0 MIN, AND DECREASED SLIGHTLY THEREAFTER. THE MAX.  
YIELD (60PERCENT) OF II WAS OBTAINED WHEN THE REACTION WAS CARRIED OUT  
AT 45 TO 55DEGREES. THE RATE CONST. OF THE REACTION (K) WAS 0.5 MIN  
PRIME NEGATIVE1 AT 30DEGREES; LOG K INCREASED LINEARLY FROM NEGATIVE4  
TO 3 WHEN THE TEMP. INCREASED FROM 5 TO 55DEGREES; THE ENERGY OF  
ACTIVATION WAS 25.4 KCAL. PER MOLE.

UNCLASSIFIED

AM0033529

F

Simulin, N.A.; Mel'nikov, Ye.Ya.; Furman, M.S.; Elichevskiy, I.R.;  
Samarin, B.P.; Alekseyev, A.M.; Tveretskiy, S.A.; Kreysberg, Ya.A.  
 (Editorial Board)

Handbook for the Nitrogen Worker. Vol. 2 (Spravochnik azotchika. Tom  
 Khiniya. 445 pp. (pl. 652))

TABLE OF CONTENTS:

Preface		9
Chapter I	The Production of Nitric Acid	11
II	The Production of Nitric Fertilizers	117
III	Materials and Basic Special Equipment	251
IV	Power Supply	369
V	Safety Technique	415
	Subject Index	431

1/2

19710038

6

AM003359

In the second volume of the handbook are examined the physico-chemical bases of the processes and industrial projects for the production of nitric acid and nitric fertilizers. The handbook is designed for technical engineers in the nitric and other branches of chemical industry. Each chapter has a bibliography, in all 294 references

$\frac{2}{2}$

4

19710039

1/2 013 UNCLASSIFIED PROCESSING DATE--04DEC70  
TITLE--DETERMINATION OF NITRIC ACID CONSUMPTION DURING THE PRODUCTION OF  
ADIPIC ACID FROM CYCLOHEXANOL -U-  
AUTHOR-(03)-PREOBRAZHENSKIY, V.A., GOLDMAN, A.M., FURMAN, M.S.  
COUNTRY OF INFO--USSR  
SOURCE--KHIM. PROM. (MOSCOW) 1970. 46(3), 170-1  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--ADIPIC ACID, CYCLOHEXANOL, CHEMICAL PRODUCT PRODUCTION, NITRIC  
ACID, SUCCINIC ACID  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY FICHE NO----FD70/605012/E06 STEP NO--UR/0064/70/046/003/0170/0171  
CIRC ACCESSION NO--AP0140311

UNCLASSIFIED

2/2 013

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0140311

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE CONSUMPTION OF HNO SUB3, DELTA SUBHNO SUB3, IN THE OXIDN. OF CYCLOHEXANOL TO ADIPIC ACID BY HNO SUB3 DEPENDS ON THE YIELD OF INTERMEDIATES IN THE PROCESS; THE TOTAL CONSUMPTION OF HNO SUB3 FOR THE CONVERSION OF CYCLOHEXANOL TO ADIPTIC, GLUTARIC SUCCINIC AND OXALIC ACIDS MAY BE DETD. FAIRLY ACCURACTELY FROM THE EQUATION: DELTA SUBHNO SUB3 EQUALS 3 MINUS 1.2N SUBCNA WHERE N SUBCNA IS THE YIELD (MOLE-MOLE) OF CARBOXYNITROLIC ACID AND DELTA SUBHNO SUB3 IS IN MOLE-MOLE(MOLE CYCLOHEXANOL). THIS EQUATION IS IN GOOD AGREEMENT WITH DATA FROM THE LITERATURE.

UNCLASSIFIED

Computers: Digital

USSR

UDC 681.323

RAYKHMEN, Ya. A., RUDKO, V. A., BUTKOV, Yu. G., FURMAN, N. A., and KOZLOV, V. A.

"A Specialized Digital Computer for Calculating the Interconnections of Integrated Systems"

Moscow, Oktrytiya, Izobreteniya, Promyshlennyye Obratzsy, Tovarnyye Znaki, No 22, Aug 72, Author's Certificate No 298936, filed 8 Aug 68, published 14 Jul 72, p 249

Translation: This Author's Certificate introduces: 1. A specialized digital computer for calculating the interconnections of integrated systems. The computer contains a memory device, address registers for given and current coordinates, comparison circuits, registers for points, an analysis circuit, a recording circuit, and an input/output module. As a distinguishing feature of the patent, speed is increased and the device is simplified by adding a block for transfers along X and Y and a circuit grouping block with its output connected to the first inputs of the address register for current X and Y coordinates, whose second inputs are connected to the first outputs of the blocks for transfers along X and Y respectively. The first outputs of the current coordinate registers are connected through a converter

1/3

Miscellaneous

USSR

UDC 621.398.93

SHCHERBAN', A. N., FURMAN, N. I., PRIMAK, A. V., KOPEIKIN, V. I.,  
POKARZHEVSKIY, A. S., MARUSOV, A. G., DASHEVSKIY, L. N., and KHOMYAKOV, A. T.,  
Institute of Technical Heat Physics, Acad. Sc. Ukr SSR, Gas Institute, Acad.  
Sc. UkrSSR

"Telemetric System for Sanitation-Chemical Control of Air Pollution"

Kiev, Khimicheskaya Tekhnologiya, No 3, (63), May-Jun 72, pp 49-52

Abstract: A complex system is discussed designed to fulfill the following functions: organization of the input operations of the informations from control-determination points (CDP) into the computer memory with wide range of possible changes in the frequency and order of query to CDP; determination of the measurement points with higher pollution and increased frequency of queering the respective recorder; statistical treatment of the information, tabulation or graphing of the results; and analysis of the effectiveness of the utilization of purifying equipment by the change in air pollution in a controlled region.

1/1



USSR

UDC 622.241.8

SHCHERBAN', A. N., FURMAN, N. I., BELOGOLOVIN, N. S., CHERNYAK, V. P.

"Depth Relay-Telemetering Thermometer-Thermosonde"

Teplofiz. i teplotekhnika. Resp. mezhved. sb. (Thermophysics and Power Engineering-republic interdepartmental collection of works), 1970, vyp 17  
(from RZh-Metrologiya i Izmeritel'naya Tekhnika, No 8, Aug 70, Abstract No 8.32.588)

Translation: The schematic of a telemetering thermometer-thermosonde in the form of linear thermistor, bridged by tunnel diode, is considered. Two-wire cable link of reduced reliability ensures simultaneous power supply from the surface of the thermometer-thermosonde or thermometer-thermosonde, placed at specific intervals in the well, and selective reading from the surface of information using an automatic readout device. The readout of the measured temperature from the surface is relayed (by means of non-contact relay-trigger) in the process of fusion automatic search of the power supply of thermosonde for the given relay point of its volt-ampere characteristic which equals the calibrated current of given temperature scale of secondary instrument. The

1/2

USSR

SHCHERBAN', A. N., et al., Teplofiz. i teplotekhnika, Resp. mezhved. sb., 1970, vyp 17

depth telemetering thermometer as compared with known prototypes possesses much higher portability, increased reliability, low threshold of sensitivity and invariance of readings with the change in parameters of the two-wire cable link of the telemetering thermometer-thermosonde with the surface.

4 ill. 5 bibl. entries.

Resume

2/2

- 145 -

USSR

UDC: 621.374.4

F  
FEDOROV, V. A., FURMAN, N. P., MASLOV, E. B.

"A Key Frequency Divider With High Division Coefficient"

V sb. Obmen opytom v radioprom-sti (Experience Pooling in the Radio Industry--collection of works), Vyp. 2, Moscow, 1970, pp 57-58 (from RZh-Radiotekhnika, No 7, Jul 70, Abstract No 7G311)

Translation: A description is given of a key frequency divider based on two transistors connected in an LC-oscillator circuit with a key at the input to which oscillations are sent through an RC phase-shifting network from the output tank. The distinguishing feature of the divider is that it uses an active key in addition to capacitive feedback. The use of capacitive feedback simplifies the divider, while the active key in combination with an rf choke in the emitter circuit increases the division coefficient by an order of magnitude. Bibliography of four titles. Resumé.

1/1

USSR

535.813:666.1.053.65

FURMAN, Sh. A., FOMENKO, P. N., SKORODUMOV, V. N., KATSNEL'SON, L. B.

"Vacuum Application of Multi-Layered Dielectric Coatings on Large Parts"

Optiko-Mekhanicheskaya Promyshlennost', No. 3, 1970, pp 36-41.

Abstract: The vacuum-method application of dielectric materials forming multi-layered coatings on large optical parts up to 2600 mm in diameter, and the usage of a vacuum installation with a chamber diameter of 3250 mm, equipped with a system beneath the cap with a rotating evaporator and photometer, which tests the thickness of the layers during the process of manufacture of the coating are analyzed. Photographs are presented of parts of the system. The investigations showed that the coatings had identical optical characteristics at various points on the surface of the specimen and good operational qualities. For example, mirrors were prepared, consisting of 9 to 13 alternating layers of zinc sulfide and magnesium fluoride or zinc sulfide and strontium fluoride, having  $R = 98-99.5\%$  in the area of the main maximum of coefficient of reflection, and minimum and maximum values of  $R$  for a fixed wave length differing by not over 0.1% over a 1400 mm diameter surface area. The coatings have high mechanical strength, can be cleaned with a dry cloth, ether, alcohol or a cotton pad wet with water.

1/1

USSR

UDC 621.314.58 (088.8)

VULIS, M.L., ZAGORSKIY, A.YE., FURMAN, V.B., CHELNCKOV, R.S., GUSCOVSKIY, V.V.  
[Vses. n.-i. i proyektno-tekhnol. in-t kran i tyag elektrooborud. -- All-Union  
Scientific-Research Design And Planning Technological Institute Of Crane And  
Haulage Electrical Equipment]

"Static Frequency Converter With Direct Coupling"

USSR Author's Certificate No 256054, filed 23 Sept 68, published 8 Apr 70 (from  
RZh--Elektronika i yeye primeneniye, No 11, November 1970, Abstract No 11B458P)

Translation: The invention pertains to a frequency converter with direct coupling,  
accomplished by a bridge circuit using thyristors. With the object of eliminating  
the third and multiples of three harmonics in the output voltage of the converter,  
it is proposed to provide the converter with a choke coil with a ferromagnetic  
core, three identical windings of which are connected series--cumulatively [--soglasno]  
at each of the output phases of the converter. 1 ill. I.R.

1/1

*radar*

UDC 629.7.058.74.001

*Radars*

SP-3483 54-41 1 June 72

"Estimating the Angular Position of a Target by Scanning Radar against a Background of Correlated Noise," Yu. A. Mironov, V. A. Mikhaylov, *Teoriya i Tekhnika Radiotekhnicheskogo i Radiofizicheskogo Obzora*, No. 1, 1970, pages 16-23.

The problems of estimating the target azimuth against a background of correlated noise are solved. The potential accuracy of angle finding is determined. A study is made of a quasi-optimal algorithm for measuring the angular position of the target. The bibliography has 6 entries.

UDC 622.7.058.54.001

*Radars*

"Estimating the Direction-Finding Accuracy of a Scanning Radar Using the Markov Chain Apparatus," V. A. Mironov, V. A. Mikhaylov, *Teoriya i Tekhnika Radiotekhnicheskogo i Radiofizicheskogo Obzora*, No. 1, 1970, pages 16-23.

A method of calculating the estimate dispersion of the azimuth measured by a scanning radar is discussed. The azimuth is estimated by the maximum order to calculate the accuracy of direction-finding, the apparatus of discrete Markov chains is used. It is demonstrated that the transition probability matrix for the Markov chain in the given case will be a Jacobian matrix. Expressions are derived for calculating the matrix elements. The accuracy characteristic of the direction finding is calculated for a number of pulses in the packet as an example. There is 1 illustration and a 7-entry bibliography.

SP-3483 54-41 1 June 72

FURMAN, Ya. A.

10 Radar

11- Radar

ESTIMATING THE DIRECTION FINDING  
ACCURACY OF A SCANNING RADAR BEING THE RADAR CHAIN APPARATUS

SO: JOKS 55143  
1 July 1972

UDC 629.7.058.54.001

V. A. Furman, Candidate of Technical Sciences,  
Ya. A. Furman, Candidate of Technical Sciences,  
A. A. Furman, Candidate of Technical Sciences

Pages 23-25

The problem of the direction finding accuracy of a scanning radar in the presence of noise and diffraction is solved. The subject of the research is the dispersion of the angular coordinate estimate was calculated either in terms of the expression for the angular coordinate estimate [1, 2, 3, 4], or by the Monte Carlo method [1, 4] or by expansion of the signal function at the output of an adequate receiver in a Taylor series, just as in reference [5].

There are some deficiencies in the presented results. First, for example, the expression for the angular coordinate estimate is not derived in a generally effective and sufficiently formal manner to be found, however, in practice, the same also, as a rule, is derived. This leads to high calculation errors. Finding the dispersion of the parameter estimates by the Monte Carlo method is not frequently connected with a large number of repetitions of the experiment, but is, before experiments of random type. In addition, the Monte Carlo method gives results only in numerical form. Expansion of the signal function in a Taylor series for two terms of the series only gives limited accuracy of the estimate.

In this paper a study was made of a method of finding the dispersion of the angular coordinate estimate during digital processing of radar data based on using the apparatus of discrete Markov chains.

Statement of the Problem

A pulse single-beam radar scans space with a constant angular velocity. In the presence of a point target in the scanning zone, a video signal appears at the radar output. This signal is distorted by noise and fluctuation of the effective scattering cross section of the target. The mean number of pulses in the radar is  $n$ . After time dilatation and binary quantization of the output voltage of the radar, the series of 0's and 1's obtained enters

GURIN

FURMAN, Ya. A.

Rodar

INFORMATION ON THE MAIN VIBRATION SENSITIVE  
FALSE DETECTION FOR A BINARY SIGNAL DETECTOR WITH VARIABLE HETEROGENEITY SIZE

UDC 629.7.058.6.001

Y. A. Furman, Candidate of Technical Sciences

Pages 1-15

In solving an entire series of problems of radar data processing, it is necessary to analyze a variety of signals of constantly updated signal sources. This refers primarily to the detection of signals with an unknown time of arrival upon, as is known in reference [1], power-based criteria are used to find the detection. Even with the probability of correct detection  $P_d$ , one of the most important parameters of such detectors is the probability of false alarm in the time interval  $T$  during which the appearance of a signal is expected or the average time between successive false detections  $t_f$ . However, in a number of cases of interest, the determination of the frequency of false alarms  $\lambda_f = 1/t_f$  by the S. then procedure [2] has been complicated because of the nonstationarity of the stochastic processes at the detection filter output. This pertains above all to digital methods of signal detection.

The apparatus of detector theory chains is used in the papers by N. Ushakov [4], S. Z. Nur-tin [3] and Frolov [1] to analyze digital detectors.

The purpose of this paper is the determination of the frequency of false alarms (the average time between successive false detections  $t_f$ ) for binary signal detection with a variable energy size based on using the apparatus of functional analysis of D. Berny [5] for the analysis of threshold Markov chains.

Keywords: 1. of a detection level

In the process of receiving a given series of noise with known sample correlation, the output voltages of the radar are quantized with respect to amplitude into two levels, and they are digitized with respect to time. Then they are entered in the buffered memory as shown in reference [1]. The time difference interval  $\Delta t$  usually exceeds the correlation time of the noise  $\Delta t_c$  at the radar receiver output  $t_{out} > t_c$ . In this case, the  $n$  and  $1/n$  in adjacent range rows are statistically independent. Writing in the buffered memory matrix in performed with respect to the range rows and reading, with respect to the azimuth rows.



USSR

UDC 621.396.932.1

LIKHAREV, V. A., FURMAN, Ya. A., KARTASHKIN, A. S.

"Using the Apparatus of Markov Chains to Evaluate the Accuracy of Direction Finding With a Search Radar"

Tr. Mosk. aviats. in-ta (Works of Moscow Aviation Institute), 1971, vyp. 207, pp 23-28 (from RZh-Radiotekhnika, No 12, Dec 71, Abstract No 12G77)

Translation: A method is outlined for calculating variance in estimating the azimuth measured by a search radar. The azimuth is evaluated from the maximum output voltage of a binary integrator utilizing an "m out of n" criterion. The apparatus of discrete Markov chains is used to evaluate the accuracy of direction finding. It is shown that the matrix of transition probabilities for the given case is a Jacobi matrix. Expressions are presented for calculating the elements of the matrix. The accuracy characteristics of direction finding are calculated for the packet  $n=5$  as an example. One illustration, bibliography of 7 titles. Résumé.

1/1

Radar

USSR

UDC 621.371.332.3:621.391.883.6

FURMAN, Ya. A., LIKHAREV, V. A.

"Determination of the Average Time Between Successive False Detections for a Binary Signal Detector With Variable Storage Volume"

Tr. Mosk. aviats. in-ta (Works of Moscow Aviation Institute), 1971, vyp. 207, pp 9-15 (from RZh-Radiotekhnika, No 12, Dec 71, Abstract No 12C9)

Translation: The paper deals with problems in determining the average number of false targets (the average time between successive false detections) in a survey sector assuming uncorrelated interference for detectors with unknown time of arrival of the signal from the target when nonclassical criteria are used for decision making. A relation is found for the average time between successive false detections as a function of the quantization threshold. Two illustrations, one table, bibliography of five titles. Resumé.

1/1

Radiation Chemistry

USSR

UDC 678.675'126.019.3:538.16

FURMAN, YE. G., ABRANOVA, T. M., DAR'YEVA, E. P., SPIRINA, I. A., FOMENKO, A. S.,

"Radiation-Chemical Transformations of Polycaproamide in the Presence of Secondary Aromatic Amines"

Moscow, Plasticheskiye Massy, No 1, Jan 72, pp 12-15

Abstract: The paper presents the results of a study of the effect which esters of 4-hydroxydiphenylamine and certain other secondary aromatic amines, as well as substituted phenols have on process of radiation and radiation-oxidation destruction of polycaproamide. Seventeen of these additives were studied in quantities of 0.03 mole/kg. Studies were made of the influence of the additives on accumulation of free radicals, gas release, fragmentation of the polymer chain during radiolysis and radiation oxidation of polycaproamide, as well as their effect on accumulation of peroxide and carboxyl compounds as a function of temperature and concentration of the additive accompanying radiation oxidation of the polymer. The electron paramagnetic resonance method was used to determine the structure and stability of the radicals formed when secondary aromatic amines interact with the peroxide radicals which arise during radiation oxidation of the polycaproamide and its low-  
1/2

USSR

FURMAN, YE. G., et al., *Plasticheskiye Massy*, No 1, Jan 72, pp 12-15

molecular analog -- N-butylpropionamide. It is found that secondary arylanines have a protective effect during radiation oxidation of polyamides, and that this effect is due to the interaction between peroxide radicals and amines, resulting in the breaking of chains and leading to stable nitrate radicals instead of reactive peroxide radicals. The authors thank S. I. Burnistrov for furnishing some of the specimens. Five figures, two tables, bibliography of eleven titles.

2/2

- 71 -

Acc. Nr.: AP0029099

Ref. Code: UR 0477

PRIMARY SOURCE: Zdravookhraneniye Belorussii, 1970, Vol 16, Nr 1,  
pp 56-58

C-REACTIVE PROTEIN IN ACUTE SUPPURATIVE AFFECTIONS

V. M. Furmanchuk

SUMMARY

The C-reactive protein was investigated in 60 patients with acute suppurative affections. On the day of operation a positive reaction on the C-reactive protein was in 35 patients, on the 6-th day — in 10 ones. A reaction on the C-reactive protein in our observations was more sensitive than erythrocyte sedimentation rate ( $P < 0.005$ ).

REEL/FRAME

19680610

USSR

Antennas

UDC: 621.396.676.2(088.8)

FURMANOV, B. N., ZVORYGIN, A. G., BIZIN, P. S., and LEKHMAN, L. N.

"Antenna"

/In-t corn. dela im. A. A. Skochinskogo/ (The A. A. Skochinskiy Institute of Mining Affairs) Authors certificate USSR, class 21a 46/01, (H 01 q), No. 266864, Application 21.10.68, Publication 27.07.70 (from RZh-Radiotekhnika, No. 3, March 71, Abstract No. 3A293P)

Translation: For wireless high-frequency communication in mines. inductive transmitting antennas have hitherto been used in the form of frames with or without cores, operating into unmatched loads and having low Q. To eliminate these deficiencies and increase the current, an antenna has been proposed in the form of two insulated sheets (e.g., paralon) with electrically conducting layers (e.g., foil) between them. Such a layer is used as the plate of a capacitor, introduced in the tuned circuit of the transmitter, while the upper roof of the electric car storage cell is used as the other plate. Yu. V.

1/1

USSR

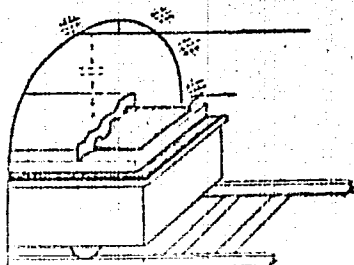
UDC: 621.396.676.2

F  
FURMANOV, B. M., ZVORYGIN, A. G., BIZIN, P. S., LEXETMAN, L. N., Institute of Mining imeni A. A. Skochinskiy

"An Antenna"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 12, 1970, Author's Certificate No 266864, filed 21 Oct 68, pp 47-48

Abstract: This Author's Certificate introduces an antenna made in the form of a capacitor in the transmitter output circuit. As a distinguishing feature of the patent, the current in the antenna is increased by making it in the form of two insulating sheets (e. g. porolon) with an electrically conductive layer such as foil between them. This layer is one plate of the capacitor in the transmitter output circuit, and the other plate is the upper cover of the battery box in an electric locomotive.



1/1

USSR

UDC 621.382.2/3

BARYSHNIKOV, G. S., DYGAJ, I. V., ~~FURMANSKIY~~, I. A.

"A Packaging Set for Semiconductor Devices"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, 1970, No 33, Soviet Patent No 285115, class 21, filed 31 Dec 68, published 29 Oct 70, pp 58-59

Translation: This Author's Certificate introduces a packaging set for semiconductor devices with a flange. The device contains a box, a bushing with sockets, and a patch. As a distinguishing feature of the patent, packaging is simplified and productivity is increased by making the box in the form of a parallelepiped which is split parallel to one of its faces, and using a bushing of the same shape with sockets on both its larger faces, these sockets being staggered so that the axes of the sockets in the upper and lower faces of the bushing do not meet. The set includes two cover plates with holes whose diameter is less than that of the flanges on the semiconductor devices.

1/1

- 69 -



Adsorption

USSR

UDC 66.071.7

AKSEL'ROD, YU. V., DIL'MAN, V. V., FURMER, YU. V.

"Interfacial Turbulence in a Falling Liquid Film Under Conditions of Chemisorption"

Teoreticheskiye Osnovy Khimicheskoy Tekhnologii, Vol 5, No 5, 1971, pp 676-683

Abstract: The flow of a fluid film from desorption of poorly soluble gases ( $N_2O$ , He, Xe) from aqueous solutions of monoethanolamine (MEA) and NaOH was experimentally studied in the wave and turbulent modes with simultaneous chemisorption of  $CO_2$  from the gas. It is shown for the  $CO_2$ -MEA system that when the chemical reaction occurs, the rate of desorption of the inert component sharply increases, which is explained by the development of convective flows in the immediate area of the phase division surface. It is shown that under conditions of turbulence between phases, molecular diffusion has no significant influence on the rate of the transfer processes.

1/1

Acc. Nr. **AP0053777** Abstracting Service:  
CHEMICAL ABST.

Ref. Code  
**UR0366**

5/20

110954h (Polyfluoroaryl)methanes and their derivatives. V.  
Reaction of tris(polyfluoroaryl)methanols with sodium methylate.  
Lubenets, E. G.; Gerasimova, T. N.; Furov, V. M.; Burkhach,  
V. A. (Novosibirsk. Inst. Org. Khim., Novosibirsk, USSR).  
Zh. Org. Khim. 1970, 6(2), 365-8 (Russ). The reaction of  
MeONa with  $\text{Ph}_2\text{C}(\text{OH})\text{C}_6\text{F}_5$  in MeOH at 20-50° gave  $\text{C}_6\text{F}_5\text{H}$   
(I),  $\text{PhCO}$ , and 2,3,5,6-tetrafluoroanisole. Similarly,  $(\text{C}_6\text{F}_5)_2\text{C}$   
 $\text{C}(\text{OH})\text{Ph}$  or  $\text{PhCOC}_6\text{F}_5$  reacted with MeONa to give  $\text{PhCO}$ -  
 $\text{C}_6\text{F}_5\text{OMe}$ -4, I, and  $\text{PhCO}_2\text{Me}$ .  $(\text{C}_6\text{F}_5)_2\text{COH}$  or  $(\text{C}_6\text{F}_5)_2\text{CO}$   
reacted with MeONa to give a mixt. of 2,4-(MeO) $_2\text{C}_6\text{F}_3\text{COC}_6\text{F}_4$ -  
OMe-4, [2,4-(MeO) $_2\text{C}_6\text{F}_3$ ] $_2\text{CO}$ , 4-MeOC $_6\text{F}_4\text{CO}_2\text{Me}$ , and 2,4-  
(MeO) $_2\text{C}_6\text{F}_3\text{CO}_2\text{Me}$ . CPJR

new

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REEL/FRAME  
19830840

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USSR

SITENKO, A. G.; FURSA, A. D.; DOTSENKO, I. S. (Institute of Theoretical Physics, Ukrainian Academy of Sciences; Institute of Nuclear Research, Ukrainian Academy of Sciences, Kiev)

"Calculation of the Distortion of Wave Functions during Multiple Analysis of Fast Nucleon Scattering by Nuclei"

Kiev, Ukrainskiy Fizicheskiy Zhurnal; June, 1971; pp 881-93

ABSTRACT: Wave function distortion in the initial and finite states is considered within the framework of the multipole formalism in describing high-energy nucleon scattering by nuclei. The distortional optical potential is calculated on the basis of two-nucleon interaction in accordance with the multiple scattering theory. Numerical calculations were made of the angular distributions under elastic scattering of protons by  $C^{12}$  nuclei as well as under inelastic scattering of protons with excitation of levels  $0^+$ ,  $1^+$ ,  $2^+$ , and  $3^-$  when  $T = 0$

1/2

- 113 -

USSR

SITENKO, A. G., et al., Ukrainskiy Fizicheskiy Zhurnal, Jun 71, pp 881-893

and  $1^+$  and  $2^+$  when  $T = 1$  of the  $C^{12}$  nucleus. A comparison with the experimental data is made for the proton energy of 185 Mev. The character of the angular relationships and absolute magnitudes of the cross sections in most cases is in good agreement with the experimental values.

The article includes 41 equations and 10 figures. There are 10 references.

2/2

USSR

FURSAYEV, M.A.

UDC 621.385.6

"To The Problem Of Cophasing Of A Needle And A High-Frequency Field At The Input Stage Of A Platinotron"

V sb. Vopr. elektron. tekhn. (Problems Of Electronics Technology--Collection Of Works), No 2, Saratov, Saratov University, 1971, pp 41-51 (from RZh:Elektronika i yeye primeneniye, No 2, Feb 72, Abstract No 2A138)

Translation: In order to check the correctness of an assumption concerning the cophasing of a microwave field and an electronic needle [spitsa] at the input stag of a platinotron (P), an analysis is conducted of the band properties and phase frequency characteristics of a P. Formulas are given as well as calculations of a series of dependences of the amplification factor of a P on the parameters of the "cold" dissynchronism (i.e., on the frequency) with the presence and in the absence of a reactive component of interaction. Also calculated is a series of phase characteristics of the P as a function of the parameters of dissynchronism for various values of the amplification parameter. It is shown that the results of the calculations do not correspond

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USSR

FURSAYEV, M. A., V sb. Vopr. elektron. tekhn., No 2, Saratov,  
Saratov University, 1971, pp 41-51

with the physical concepts and experimental data. Thus it is demonstrated that the assumption concerning the cophasing of a microwave field and an electronic needle at the input of the delay systems of the P, assumed in Dombrowski's work (cf. Dombrowski, G., Trans.IRE, 1959, vol. ED-6, No 4, p 419) is not valid. 4 ref. E.G.

2/2

- 110 -

USSR

UDC: [621.372.4+621.322.51]629.64

F  
FURSAYEV, M. A., SHELIKHOV, G. M.

"Accounting for the Effect Which the Cover on the Rods of a Ladder-Type Delay System has on its Dispersion Properties"

V sb. Vopr. elektron. tekhniki (Problems of Electronic Technology--collection of works), Saratov, 1970, pp 74-79 (from RZh-Radiotekhnika, No 6, Jun 70, Abstract No 6B117)

Translation: The authors consider the change in the dispersion properties of a ladder-type delay system with double straps in the middle plane when the rods of the system are enclosed in rectangular covers used to increase the effectiveness of electron interaction and to improve heat dissipation. The analysis is based on use of an equivalent circuit in the form of a cascade-connected two-terminal pair network corresponding to the strap section, and a single-terminal pair corresponding to the conductivity of the resonator. Relationships are derived for calculating a ladder-type system with a cover. A procedure is described for experimental verification with the aid of an electrolytic bath. Three illustrations, one table, bibliography of eight titles. N. S.

1/1

USSR

UDC 532.5

LEONT'YEVA, N. V., LUN'KIN, YU. P., FURSENKO, A. A., Leningrad

"Flow around Blunt Bodies by a Nonequilibrium-Ionized Radiating Gas"

Novosibirsk, Fizika Goreniya i Vzryva, Vol 9, No 5, 1973, pp 653-658

Abstract: A study is made of hypersonic flow of a nonequilibrium-ionized mono-atomic nonviscous radiating gas around a spherical blunt body taking into account the leading radiation. In calculating the flow parameters the system of gas dynamic equations was solved jointly with the equations of radiation transfer. In the range of the investigated parameters, consideration of the resonance radiation has a weak effect on the position of the shock wave and the gas dynamic fields in the shock layer. As a result of the comparatively low recombination rate, the degree of ionization on the upper beams can significantly exceed the corresponding equilibrium values. The study includes a discussion of the kinetics of ionization and radiation in the shock layer, the calculation of the parameters in the heated layer, and the method of solution. The solution technique is reduced to binary iterations just as was previously done by M. D. Kremenetskiy, et al. [PMTF, No 4, 1971].

1/1

- 19 -



USSR

UDC 539.893:548.733

ALYAMOVSKIY, V. N., KIRKINSKIY, V. A., FURSENKO, B. A.

"High-Pressure X-Ray Chamber"

Moscow, Pribery i Tekhnika Eksperimenta,

No 6, 1971, pp 166-169

Abstract: A new high-pressure x-ray chamber is described which is similar to one introduced earlier [S. S. Kabalkin, et al., Dokl. AN SSSR, Vol 176, No 5, 1044, 1967]. The new chamber permits Debye powder diagrams of substances to be obtained under conditions of quasihydrostatic compression to 200 kilobars. The chamber is simple to manufacture and is distinguished by complete autonomy and small size. The primary advantages of the proposed design include the following: 1) it is simple to manufacture; 2) it is completely autonomous; 3) it is small in size; 4) it is convenient to install on series x-ray equipment inasmuch as an awkward hydraulic press is not required to create forces; 5) it is possible to maintain constant pressure in the sample for a prolonged period of time as opposed to hydraulic systems in which the force decreases noticeably during exposures of 24-48 hours as a result of leakage of the working fluid through the seals; 6) self-centering of the anvils relative to each other and relative to the cartridge with the photographic film; 7) automatic satisfaction of the condition of parallelness of the operating surfaces of the anvils; 8) the possibility of combining high pressures with shears in the

1/2

- 140 -

USSR

YUKHTIN, N. N., FURSENKO, I. V., IVANOVA, N. S., SELEZNEV, A. P., SHALINA, N. A.

"Synthesis of N-3,4-Dichlorophenyl-N'-hydroxyurea"

V sb. Khim. sredstva zashchity rast. (Chemical Plant Protective Agents -- collection of works ), No 2, Moscow, 1972, pp 59-65 (from RZh-Khimiya, No 19, Oct 73, Abstract No 19N546)

Translation: Experimental results are reported of the first stage in the synthesis of lynurone -- synthesis of N-3,4-dichlorophenyl-N'-hydroxyurea [ I ]. The relationship between the yield of I and the type of solvents has been investigated. Maximum yield of I has been achieved using the solvent system chlorobenzene-methanol-water 2:2:1. It has been shown that I is capable of reacting in two directions during its carbamoylation with 3,4-dichlorophenylisocyanate.  $\text{NH}_3$  is passed through a solution of 8.61 g hydroxylamine sulfate in 60 ml water at 20° until pH of 7.4 is reached, MeOH is added, the reaction mixture cooled to 0-3°, 18.8 g of 3,4-dichlorophenylisocyanate in 121 ml ClPh is added, the mixture is left standing for 15 min., evaporated and filtered, yielding 20.6 g of 94% I.

1/1

- 54 -

USSR

UDC 547.26'118

IVANOVA, N. L., ZAVALISHINA, A. I., ~~FURSENKO, I. V.~~, NASONOVSKIY, I. S., KONYA-YEVA, I. P., KOMLEV, I. V., NIFANT'YEV, E. YE.

"Chromatography of Organic Compounds of Trivalent Phosphorus in a Thin Sorbent Layer. II"

Leningrad, Zhurnal Obshchey Khimii, Vol XLII (CIV), No 1, 1972, pp 91-93

Abstract: Some acids of phosphorus and their esters can be identified by the method of thin layer chromatography, but the chromatograms of such substances are not always sufficiently clear and the method of thin layer chromatography was not successful heretofore for analysis of the amides and other important types of derivatives of the acids of trivalent phosphorus [E. Ye. Nifant'yev, ZhOKh, No 35, 1980, 1965]. Here, a more detailed study has been made of the conditions of thin-layer chromatography of some of the most useful types of substances of this class. As a rule, aluminum oxide of second degree Brockman activity was used as the sorbent, but silica gel, polyvinyl alcohol and chlorated polyethylenes were also investigated. They gave worse results. The presented method of thin layer chromatography proved to be useful for analysis of medium and acid phosphites, thiophosphites, amides of phosphoric acid and amidophosphites and esters of hypodiphosphoric acid.

1/1

- 38 -

USSR

UDC 547.26.118

NIFANT'YEV, E. Ye., and FURSENKO, I. V., Chair of Chemical Technology

"Reactions of Acyl Phosphites with Secondary Amines and Mercaptans"

Moscow, Vestnik Moskovskogo Universiteta, Vol 12, No 2, Mar-Apr 71, p 245

Abstract: Acetyl 1,3-butylenephosphite was treated with equivalents of diethylamine in ether at  $-5^{\circ}$  to yield the diethylamide of 1,3-butylenephosphorous acid, b. p.  $87-88^{\circ}/11$  mm,  $n_D^{20}$  1.4628. Without cooling, the reaction yields butylene phosphite and acetic acid diethylamide. Acyl phosphites do not react with mercaptans under conditions preventing the formation of free radicals. In presence of tertiary amines acyl phosphites are converted to thiophosphites when treated with mercaptans, or sodium mercaptides. In this fashion catechol-S-benzyl thiophosphate was obtained, b.p.  $168-180/1$  mm,  $d_4^{20} = 1.2760$ ,  $n_D^{20} = 1.6090$ .

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USSR

UDC: 547.26'118:546.133.1

NIFANT'YEV, E. Ye., FURSENKO, I. V., Chair of Chemical Technology, Faculty of Chemistry, Moscow State University

"Acyl Phosphites"

Moscow, Uspekhi Khimii, Vol 39, No 12, Dec 70, pp 2187-2216

Abstract: The article is a survey of a new area in the field of organophosphorus compounds--the chemistry of acyl phosphites. The possible methods of synthesizing these compounds are discussed as well as their chemical properties. Probable reaction mechanisms are considered. Among the methods of synthesis which are discussed are interactions of phosphorous acid and dialkyl phosphites with carboxylic acid anhydrides, acid chlorides of trivalent phosphorus with carboxylic acids and their salts, pyrophosphites with carboxylic acids, acid amides of trivalent phosphorus with carboxylic acids and their anhydrides, and trialkyl acetyl silanes with phosphorous acid halides. Reactions with electrophilic and nucleophilic reagents are discussed.

1/1

USSR

UDC 621.383.292.8:621.382

PANOVA, V.G., FEDORUS, G.A., FURSENKO, V.D.

"Amplification Of Electronic Current During Irradiation Of Crystals And Films of  $A_2B_6$  By Fast Electrons"

Poluprovodn. tekhn. i mikroelektronika. Resp. mezhved. sb. (Semiconductor Technology And Microelectronics. Republic Interdepartmental Collection), 1971, Issue 6, pp 76-80 (from RZh--Elektronika i yeye primeneniye, No 10, October 1971, Abstract No 10B240)

Translation: The dependence of the amplification factor ( $\gamma$ ) of the electron current in  $A_2B_6$  compounds as a function of the energy ( $E_e$ ) and the intensity of the electron beam ( $i_n$ ) is investigated in a wide interval of values ( $E_e$ , 5--40 keV;  $i_n$ ,  $10^{-12}$  --  $10^{-8}$  a/cm<sup>2</sup>). It is shown that in highly-sensitive single crystals of CdS and CdSe during steady electron excitation with the energy of the electrons 30 keV and 20 V of the voltage applied to the specimen  $\gamma \approx 10^8$ . The maximum possible value  $\gamma_{max}$  is estimated with  $E = 30$  keV under extreme conditions, which for single crystals of CdS can attain values of  $10^{11}$ . 2 ill. 16 ref. A.B.

1/1

- 158 -

1/2 030 UNCLASSIFIED PROCESSING DATE--11SEP70  
TITLE--ELECTROLYTIC PROPERTIES OF GASEOUS SOLUTION OF SODIUM CHLORIDE AT  
HIGH PRESSURE AND TEMPERATURE -U-  
AUTHOR--FURSENKO, V.F., KUZNETSOV, N.V.  
COUNTRY OF INFO--USSR *F*  
SOURCE--TEPLOENERGETIKA 1970, 17(2), 78-80  
DATE PUBLISHED-----70  
  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--SODIUM CHLORIDE, GAS, HIGH TEMPERATURE EFFECT, HIGH PRESSURE,  
DISSOCIATION CONSTANT, ELECTRICAL CONDUCTIVITY  
  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--1981/0866 STEP NO--UR/0096/70/017/002/0078/0060  
CIRC ACCESSION NO--AP0050860  
UNCLASSIFIED

272 030 UNCLASSIFIED PROCESSING DATE--11 SEP 70  
 CIRC ACCESSION NO--AP0050860  
 ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A CONDUCTANCE OF GASEOUS SOLNS. OF  
 NaCl WAS MEASURED AT PRESSURES OF 12.5, 13.75, AND 15.0 MM-HG. THE  
 SALT CONCS. OF THE LIQ. PHASE WERE IN THE REGION OF 2750 TO 32,150  
 MG-KG. THE SP. CONDUCTANCE OF THE GASEOUS SOLNS. (10MM PRIME NEGATIVE1  
 CM PRIME NEGATIVE1) WHICH IS A FUNCTION OF THE NaCl CONCN. WAS EXPRESSED  
 BY  $\kappa = \kappa_{\text{SUBG}} - \kappa_{\text{SUBS}}$ , WHERE  $\kappa_{\text{SUBG}}$  AND  $\kappa_{\text{SUBS}}$  ARE THE SP.  
 CONDUCTANCES OF THE GASEOUS SOLN. AND STEAM, RESP. THE DEPENDENCE OF  $\kappa$   
 ON SALT CONCN. IS EXPRESSED BY  $\kappa = A + B \sqrt{C}$ , WHERE  $A = 0.518$ ,  $B = 0.518$ ,  
 $C = \text{SUBG} - 58,500$ , WHERE  $\text{SUBG}$  (MG-KG) THE NaCl IN THE GASEOUS PHASE,  
 $C$  SUBG (G EQUIV.-KG) THE NaCl CONCN. IN THE GASEOUS PHASE, AND A AND B  
 ARE EMPIRICAL COEFFS. WHICH DEPEND ON PRESSURE. THE EQUIV. CONDUCTANCE  
 AT INFINITE DILN.  $\Lambda_{\infty}$  WAS DETD. GRAPHICALLY BY SUCCESSIVE APPROXNS.  
 THE DISSOCN. CONSTS. OF NaCl IN THE GASEOUS SOLN. WERE CALCD. BY  
 ONSAGER, OSTWALD, AND FUOSS EQUATIONS. THE FOLLOWING DATA WERE  
 OBTAINED FOR GASEOUS SOLNS. OF NaCl (PRESSURE IN MM-HG, D. IN KG-M  
 PRIME3, DISSOCN. CONSTS. AND  $\Lambda_{\infty}$  IN CM PRIME2-DHM G EQUIV GIVEN):  
 12.50, 72.2, 3.3 TIMES 10 PRIME NEGATIVE8, 1835; 13.75, 82.4, 4.72  
 TIMES 10 PRIME NEGATIVE8, 1766; 15.0, 93.8, 7.87 TIMES 10 PRIME  
 NEGATIVE8, 1720.

UNCLASSIFIED



USSR

YEGOROV, N. V., FURSEY, G. N., and MANOCHIN, S. P.

"Generality of the Basic Principles in the Autoelectron Emission of n- and p-Type Semiconductors"

Leningrad, Fizika Tverdogo Tela, vol. 13, No. 10, October 1971, pp 3110-3112

Abstract: It is shown that the appearance of a saturation region in the Fowler-Nordheim curves is a principle which is characteristic of both p-type and n-type semiconductors. The specimens used for the experiments in which this finding was made were of high-resistance n-Si with a resistivity of 300 ohm-cm. The results of the experiments are given in the form of two curves. These results agree closely with the theoretical representations of semiconductor autoelectron emission, as developed in earlier work, and confirm the generality of the basic principles in p-type and n-type semiconductor autoemission.

1/1

- 63 -

USSR

FURSEY, G. N., ANTONOV, A. A., and ZHUKOV, V. M.

"Exploding Emission Accompanying the Transition from Field Emission to Vacuum Breakdown"

Leningrad, Vestnik Leningradskogo Universiteta: Fizika, Khimiya; April-June, 1971, pp 75-78

Abstract: The effect of the transition from field emission to vacuum breakdown has been studied on a single tungsten tip (the field current densities range,  $4 \cdot 10^7$  A/cm<sup>2</sup> -  $3 \cdot 10^9$  a/cm<sup>2</sup>; pulse duration range,  $5 \cdot 10^{-9}$  -  $3 \cdot 10^{-8}$  sec). The presence of an abrupt electron current rise at the start of breakdown with the following slow electron current increase during the development of the break-down process was observed (abrupt current rise rate is  $10^9$  a/sec at  $j \approx 10^9$  a/cm<sup>2</sup> and  $10^8$  a/sec at  $j \approx 10^8$  a/cm<sup>2</sup>). Electron microscope studied show that microprotrusions form on the emitter surface during the break-down process. It takes only  $(2-3) \cdot 10^{-9}$  sec for such a protrusion to occur. This proves the presence of a very strong electric field near the surface of the exploded tip during the formation of break-down.

1/1

- 85 -

1/3 039 UNCLASSIFIED PROCESSING DATE--16OCT70  
TITLE--STABILITY OF FIELD ELECTRON EMISSION, AND MIGRATION PROCESSES  
PRECEDING THE DEVELOPMENT OF A VACUUM ARC -U-  
AUTHOR-(02)-FURSEY, G.N., KARTSEV, G.K.  
COUNTRY OF INFO--USSR  
SOURCE--ZH. TEKH. FIZ. 1970, 40(2), 310-19  
DATE PUBLISHED-----70  
SUBJECT AREAS--MATERIALS, PHYSICS  
TOPIC TAGS--FIELD EMISSION, FIELD EMISSION MICROSCOPE, ELECTRON BEAM  
STABILITY, VACUUM ARC, ELECTRODE PROPERTY, CURRENT DENSITY, HIGH PURITY  
METAL, IMPURITY LEVEL, TUNGSTEN  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--1985/0762 STEP NO--UR/005770/040/002/0310/0319  
CIRC ACCESSION NO--AP0101137

UNCLASSIFIED

2/3 039

UNCLASSIFIED

PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0101137

ABSTRACT/EXTRACT--(U) GP-O- ABSTRACT. THE IMPURITY MIGRATION PROCESS WHICH LEADS TO A CHANGE IN THE GEOMETRY OF A CATHODE SURFACE AND SUBSEQUENTLY TO A VACUUM ARC AND THE STABILITY OF FIELD EMISSION WERE STUDIED BY USING THE MUELLER FIELD EMISSION MICROSCOPE. THE CHANGE IN THE SURFACE OF THE W ELECTRODE WAS STUDIED AS A FUNCTION OF TEM, TEMP. (FROM ROOM TEMP. TO 2000DEGREESK), RESIDUAL GAS PRESSURE (SMALLER THAN OR EQUAL TO 5 TIMES 10 PRIME NEGATIVES MM HG), ELEC. FIELD STRENGTH, AND POWER GENERATED BY THE ELECTRON AT THE ANODE. THE INTENSITY OF THE APPEARANCE OF THE MIGRATION NONUNIFORMITIES ON THE CATHODE DEPENDS ON THE RESIDUAL GAS PRESSURE, THE INITIAL PURITY OF THE CATHODE SURFACE, AND THE POWER OF THE ELECTRON BEAM PRECEDING THE VACUUM ARC FORMATION STAGE. ALL OTHER CONDITIONS BEING EQUAL, THE ELEC. STABILITY OF THE VACUUM SPACE DEPENDS ON THE PURITY OF THE CATHODE SURFACE. THE EMISSION IMAGES TAKEN AT 10 SEC DURATION AND 10 PRIME NEGATIVE7 TORR SHOW THAT AT 300DEGREESK THE INITIALLY PURE CATHODE SURFACE IS COVERED WITH IMPURITY IONS. AT 1000DEGREESK THE EMISSION IMAGE IS UNIFORM, EXCEPT AT THE EDGES OF THE CUBE. AT 1400 AND 1650DEGREESK, THE SURFACE REMAINS UNIFORM (CLEAN) DURING THE ENTIRE PULSE DURATION. THE PRESENCE OF ADSORBED IMPURITIES AND THEIR MIGRATION ON THE CATHODE SURFACE LEADS TO THE INSTABILITY OF THE EMITTER. WITH A PURE CATHODE SURFACE, THE CRIT. C.D. IS DETERM. BY THE HEAT EXCHANGE CONDITIONS. AT 10 PRIME NEGATIVE9 AND 10 PRIME NEGATIVES TORR, THE CRIT. C.D. IS SIMILAR TO 10 PRIME7 A-CM PRIME2.

UNCLASSIFIED

3/3 039 UNCLASSIFIED PROCESSING DATE--16OCT70  
CIRC ACCESSION NO--AP0101137  
ABSTRACT/EXTRACT--AN INCREASE IN TEMP. TO LARGER THAN 1650DEGREESK LEADS  
TO THE DESORPTION OF IMPURITIES AND PERMITS ONE TO OBTAIN A FIELD  
ELECTRON CURRENT CLOSE TO THE CRIT. FACILITY: LENINGRAD. GOS.  
UNIV., LENINGRAD, USSR.

UNCLASSIFIED

1/2 026 UNCLASSIFIED PROCESSING DATE--23OCT70  
TITLE--KINETICS OF THE FIELD EMISSION OF P GERMANIUM -U-  
AUTHOR--(02)-FURSEY, G.N., SHLYAKHTENKO, P.G.  
COUNTRY OF INFO--USSR F  
SOURCE--FIZ. TVERD. TELA 1970, 12(2), 645-7  
DATE PUBLISHED-----70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--FIELD EMISSION, GERMANIUM SEMICONDUCTOR, VOLT AMPERE  
CHARACTERISTIC, DIRECT CURRENT, PERIODIC PULSE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--1987/1973

STEP NO--UR/0181/70/012/002/0645/0647

CIRC ACCESSION NO--AP0105047

UNCLASSIFIED

2/2 026

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0105047

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AN INVESTIGATION WAS CARRIED OUT OF THE KINETICS OF FIELD EMISSION WITH THE USE OF HIGH VOLTAGE (0.5-10 KV) RECTANGULAR PULSES OF VOLTAGE OF NEG. PLARITY APPLIED TO THE CATHODE. EMITTERS WERE USED FILLED WITH P-GE ORIENTED IN THE DIRECTION (011). THE VACUUM IN THE APP. WAS 10 PRIME NEGATIVE9 MM HG. IN THOSE REGIONS OF CURRENT VOLTAGE CHARACTERISTICS, WHERE DEVIATION FROM THE STRAIGHT LINE IS OBSD., THE EMISSION CURRENT VARIES WITH TIME AT CONST. VOLTAGE IN THE PULSE. IN THE INITIAL STAGE, TIME DEPENDENCE OF CURRENT IS ABSENT AND SQUARE PULSES OF VOLTAGE CORRESPONDS A SQUARE PULSE OF CURRENT. FACILITY: LENINGRAD. GOS. UNIV. IM. ZHDANOVA, LENINGRAD, USSR.

UNCLASSIFIED

USSR

UDC 621.315.626:621.311.4.003.12

FURSOV, S. P.

Glubokiy vvod vysokogo napryazheniya (Deep High Voltage Input), Kishinev, Nauka Press, 1970, 103 pp, ill. 62 k (from RZh-Elektrotehnika i Energetika, No 3, Mar 71, Abstract No 3Ye120K)

Translation: This article contains a study of the deep input problem for large cities including the following problems: layouts for high voltage networks with individual deep input substation feed; main networks with one-way and two-way deep input substation feed; deep input voltage; deep input substations; high voltage deep input cables, their design, laying and maintenance; high voltage deep input overhead electric power lines, specifications for them, their electrical and mechanical characteristics and maintenance; economically expedient power of high voltage deep input substation and its dependence on capital investments; cost of a medium voltage network; cost of additional installed power at the electric power plant to cover losses in the network; the relation between the operating expenses and the substation power.

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FAKMOROVICH A A

FURSOV S P  
KISHINEV

9613 67 000 002 0045 01 NFL

16OCT67

2

ENERGY SOURCE FOR AN ELECTROSPARK DEVICE

ELEKTRONNAYA OBRABOTKA METALLOV

USSR

LAZARENKO, B.P., GITLEVICH, A.Ye., TKACHENKO, V.N. and  
FURSOV, S.P., Kishinev

"Effect of Electric Discharge Parameters and Discharge System Design  
on Metal Powder Deposition Process"

Kishinev, Electronnaya Obrabotka Materialov, Applied Physics  
Institute, Academy of Sciences, Moldavian SSR, No 6, 1972, pp 24-26

Abstract: Experiments were made with discharging metal powder out of a 8 mm diameter barrel against a flat surface. The effectiveness was defined as the ratio of powder deposited to the initial charge. According to the graphs the effectiveness varied a lot with the electric discharge energy and with the distance from the barrel outlet to the flat surface, but depended little on the length of the barrel. However, according to the photographs in the article the character of deposit depends on the length of the barrel; with longer barrel the powder is deposited in liquid phase, probably because of cooling in the barrel. With shorter barrel the vapor phase appears. Photographs of plasma jets leaving the barrel show shock waves.

1/1

- 28 -

USSR

UDC 634.121.8-52:681.32.06

SADEKOV, R. KH., FURSOV, V. N., BADAMSHIN, O. U.

"Methods of Evaluating the Evenness of Motor Vehicle Roads"

Tr. N.-i. i proyekt. in-ta mekhaniz. i avtomatiz. upr. proiz-vom v avtomob. promsti (Works of the Scientific Research and Planning and Design Institute of Mechanization and Automation of Production Control in the Motor Vehicle Industry), 1971, vyp. 1, pp 103-107 (from RZh-Avtomatika, Telemekhanika i vychislitel'naya tekhnika, No 4, Apr 72, Abstract No 4A626)

Translation: An instrument is described for measuring the microprofiles of roads and highways. An algorithm which is the basis for the operation of the device is presented. There is 1 illustration and a 1-entry bibliography.

1/1

USSR

UDO 621.382.3

2

KIR'YANOVA, V.M., MAKOVYI, A.N., PRAVDINA, T.V., STAROV, V.G., FURSOV, V.V.,  
SHCHEVELEV, M.I.

"To The Problem Of The Physical Interconnection Of The Drift Of Certain Parameters  
Of Silicon Drift Transistors"

Sb.Tr. po poluprovodnikovym materialam, priboram i kh primeneniyu (Collection Of  
Works On Semiconductor Materials, Devices, And Their Application), Voronezh, 1971,  
pp 75-80 (from RZh:Elektronika i yeye primeneniye, No 11, Nov 1972, Abstract No  
11B255)

Translation: Using two types of silicon drift transistors as an example, the  
dependence is studied of the electrical parameters on the dislocation density,  
the content of  $O_2$  and the resistivity of the initial Si, and the correlation be-  
tween the values of the parameters and their changes in the process of current  
aging. 1 tab. 2 ref. V.B.

1/1

USSR

UDC: 621.395.664.12

KOKOSHKIN, V. P., SHAVRIN, S. F., SERGEYEV, M. V., ~~FURSOVA, G. V.~~

"A Compander Echo Suppressor"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 11, Apr 72, Author's Certificate No 333715, Division H, filed 12 May 70, published 21 Mar 72, p 229

Translation: This Author's Certificate introduces a compander echo suppressor which contains a rectifier amplifier, and an expander and compressor with controlled two-terminal pair network. As a distinguishing feature of the patent, the operational reliability of the compander echo suppressor is improved with simultaneous simplification by connecting the input of the expander through the rectifier amplifier to the neutral points of the controlled two-terminal pair network of the compressor. The circuit of the controlled compressor is also connected to the neutral points of the same two-terminal pair network.

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Acc. Nr: AP0049046

Ref. Code: UR0357

PRIMARY SOURCE: Vestnik Oftal'mologii, 1970, Nr / ,  
pp 64-67

EXPERIENCE GAINED IN THE USE OF ADENOSINE TRIPHOSPHORIC ACID  
FOR THE TREATMENT OF DYSTROPHIC RETINAL AFFECTIONS

A. N. Dobromyslov, I. P. Fursova

Summary

Biochemical research proved the worth of ATP in ensuring normal functions of the eye. In retinal dystrophy the ATP level goes down. Experiments conducted by the authors back in 1966 elicited amassment of ATP in the internal coats of the eye following its topical application. The present report communicates the results subsequent to subconjunctival injections of ATP to patients with senile sclerotic maculodystrophy (30 patients, 60 eyes), pigmental dystrophy of the retina (14 patients, 28 eyes), complicated myopia (10 patients, 20 eyes), far advanced glaucoma (10 patients, 16 eyes). In more than 2/3 of the patients the course of treatment (15 subconjunctival injections of a 0.25% solution in an amount of 0.2 ml) brought about a noticeable improvement of the visual function which remains stable for 8-12 months.

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REEL/FRAME  
19800832

ldh 2

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UDC 614.39/.4:658.387

PODUNOVA, L. G., FURSOVA, T. T., LIPOVTSEVA, V. V., and PANINA, A. I.,  
Republic Sanitary-Epidemiologic Station, RSFSR Ministry of Health, Moscow

"Some Elements of the Scientific Organization of Labor in Sanitary-  
Epidemiological Stations"

Moscow, Gigiyena i Sanitariya, No 10, 1973, pp 60-62

Abstract: Councils for the scientific organization of labor were appointed in major oblast sanitary-epidemiological stations to seek ways of saving time, making more efficient use of personnel and materiel, and mechanizing labor-intensive activities and laboratory tests. Actions taken at various sanitary-epidemiological stations under the guidance of these councils include: reduction of the paper work normally required of health officers, assigning more duties to paramedical personnel, centralization or consolidation of facilities, improvement of work places, adoption of new, rapid laboratory tests, and introduction of a standard form for the collection and analysis of data on infectious diseases.

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- 92 -

AA0044234

UR 0482

Soviet Inventions Illustrated, Section II Electrical, Derwent,

2/70

243680 CABLE LAYING MACHINE digs trenches for cables along an old cable. A track laying motor vehicle pulls a plough. The coupling between the plough and the towing motor is pneumatic and it is controlled by radio signals. The level and the direction of ploughing are determined by the relative position of the plough to the cable.

23.3.68 as 1228413/29-14. YA.I. MARCHEVSKI et al (3.10.69)  
Bul 17/14.5.69. Class 21c. Int.Cl. H 02g.

AUTHORS: Marchevskiy, Ya. I., Furto, G. S., Fishgal, S. I.,  
Balaban, A. S., Pil'ganchuk, P. N., Imereli, V. B., Stepanenko,  
L. K., Parkhomenko, A. I., Min'kovskaya, S. M., Voznesenskiy, I. A.,  
Vishnyakov, I. Ye., Zinoveyev, A. I., Razumovskiy, O. V., Khrulev,  
V. V., Politova, A. Ye., Khayzeruk, Ye. M., Smirnov, V. I.,  
Malakhova, V. M.

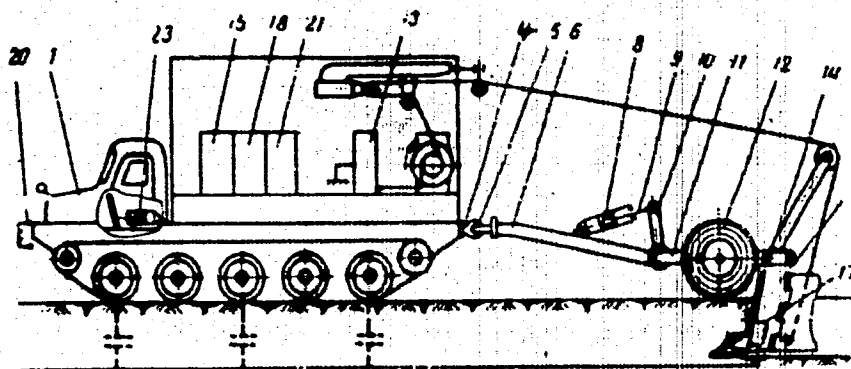
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1/2 007 UNCLASSIFIED PROCESSING DATE--18SEP70  
TITLE--EFFECT OF FERRIC OXIDE ON THE DECOMPOSITION OF CALCIUM AND  
MAGNESIUM SULFATES DURING THE ROASTING OF FLUXED PELLETS -U-  
AUTHOR-(04)-BORTS, YU.M., KOPYRIN, I.A., FUSAKOV, L.N., LENEV, L.M.  
COUNTRY OF INFO--USSR  
SOURCE--IZV. AKAD. NAUK SSSR, METAL. 1970, (1), 7-11  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--SULFATE, PELETIZATION, MAGNESIUM COMPOUND, IRON OXIDE, CALCIUM  
SULFATE, CALCINATION  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--1984/0168 STEP NO--UR/0370/70/000/001/0001/0011  
CIRC ACCESSION NO--AP0054964  
UNCLASSIFIED

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PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0054964

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. PELLETS FROM THE MIXTS. FE SUB2 O  
SUB3: CASO SUB4 EQUAL 4 AND FE SUB2 O SUB3:; MGSO SUB4 EQUAL 4(WT.  
RATIO) WERE CALCINED IN AN AIR STREAM. REACTIONS WITH CASO SUB4 AND  
MGSO SUB4 STARTED GREATER THAN 1200 AND 1000DEGREES, RESP.

UNCLASSIFIED

1/2 033 UNCLASSIFIED PROCESSING DATE--13NOV70  
TITLE--EFFECT OF DIFFUSION PROCESSES ON THE SINTERING OF METAL POWDERS.  
II. ROLE OF DIFFUSION PROCESSES IN THE ACTIVATION OF SINTERING -U-  
AUTHOR--(03)-FEDORCHENKO, I.M., IVANOVA, I.I., FUSHCHICH, O.I.  
COUNTRY OF INFO--USSR  
SOURCE--POROSHKOVA MET., FEB. 1970, (2), 14-18  
DATE PUBLISHED----FEB70  
SUBJECT AREAS--MATERIALS, MECH., IND., CIVIL AND MARINE ENGR  
TOPIC TAGS--NICKEL, COBALT, COPPER, PHYSICAL DIFFUSION, POWDER METALLURGY,  
IRON POWDER, SINTERED METAL, THERMODYNAMICS  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--2000/0127 STEP NO--UR/0226/70/000/002/0014/0018  
CIRC ACCESSION NO--AP0123899

UNCLASSIFIED

2/2 033

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0123899

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. CF. IBID., (1), 30; MET. A., 7006-54 0138. THE ACTIVATION OF SINTERING PROCESSES IN FE POWDER CONTG. TRACES OF NI, CO, AND CU WAS STUDIED WITH SPECIAL REF. TO THE PART PLAYED BY THE MUTUAL DIFFUSION OF THE CONSTITUENTS. THE ACTIVATION OF THE SINTERING PROCESS NORMALLY OBSERVED AFTER INTRODUCING TRACES OF OTHER METALS WAS ATTRIBUTED TO THE INTERACTION OF THE ASSOCIATED STRUCTURAL DEFECTS, WHICH FACILITATED DIFFUSIVE CREEP IN THE METAL. THE ACTUAL DIRECTION OF THE DIFFUSIVE FLOW BETWEEN THE PARENT METAL AND THE ADDITIVES WAS PRACTICALLY IMMATERIAL AS REGARDS ACTIVATION. ACTIVATION WAS PARTLY DUE TO THE THERMODYNAMIC INSTABILITY OF THE ADDITIVE IN THE COURSE OF SINTERING AND PARTLY TO THE CREATION OF STRUCTURAL DEFECTS BY THE SINTERING PROCESS ITSELF.

UNCLASSIFIED

Acc. Nr:

AP0049308

Abstracting Service:

CHEMICAL ABST. 5.75

Ref. Code:

4R 0226

103158y Effect of diffusion processes on the sintering of metal powders. I. Fedorchenko, I. M.; Ivanova, I. I.; Fushchich, O. I. (Inst. Probl. Materialoved., Kiev, USSR). Porosh. Met. 1970, 10(1), 30-6 (Russ). The diffusion processes in powd. bodies were studied with respect to the diffusion const. as detd. for pore-free cast metals. The dependence of the intensity of the diffusion processes was studied with respect to the degree of distortion of the cryst. lattice of the powd. bodies. The diffusion coeffs. of powd. Fe-Co and Fe-Cu systems were detd. at temps. of 850, 1200, and 850 and 1000°, resp. Microspectral anal. was used for this work. The intensity of the diffusion processes depends significantly on the degree of distortion of the cryst. lattice of the powders and on the metal deformation during pressing. Because of the considerable activity of the boundary processes, the transfer of the material in the powdery systems can be detd. in some cases by boundary diffusion. S. A. Mersol

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19801125

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USSR

FEDORCHENKO, I. M., IVANOVA, I. I., and ~~FUSHCHICH~~, O. I., Institute for Problems of Material Science, Academy of Science, Ukr SSR

"Investigation of the Effect of Diffusion Processes on the Sintering of Metal Powders"

Kiev, Academy of Sciences Ukr SSR, Poroshkovaya Metallurgiya, No 1, Jan 70.  
pp 30-36

Abstract: The effect of diffusion processes on the sintering of metal powders was investigated in order to establish 1) the possibility of evaluating the diffusion processes by the diffusion constants determined on nonporous cast metals, and 2) the dependence of the intensity of diffusion processes on the distortion of crystal lattices of powder metals. Diffusion coefficients were measured on Fe-Co and Fe-Cu powdery systems at 850, 1200° and 850, 1000°C, respectively, using the method of microspectral analysis. Since the diffusion processes in metals depend to a large extent on the presence of distortion of the crystal lattice and structure defects, experiments to study the penetration of copper into iron were conducted on samples with different degrees of structural irregularities resulting from cold hardening. Curves of the diffusion penetration of copper

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FEDORCHENKO, I. M. et al, Poroshkovaya Metallurgiya, No 1, Jan 70, pp 30-36

into iron for samples with different initial states are presented. A method suggested by J. G. Fisher was used to determine the predominant diffusion mechanism. The roles of volume and boundary diffusion in both systems were ascertained. The intensity of diffusion processes in powder systems substantially exceeded the intensity in cast metals. Preliminary high-temperature annealing substantially decreased the diffusion coefficients in powdery systems, approximating them to those in cast metals. Because of the considerable intensity of boundary processes, mass transfer in powdery systems can be determined in some cases by the boundary diffusion. Diffusion coefficients for both powdery systems are presented in tables. Orig. art. has: 3 figures, 3 tables, and 5 references.

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- 36 -



1/2 023 UNCLASSIFIED PROCESSING DATE--13NOV70  
TITLE--REPRESENTATIONS OF THE TOTAL INHOMOGENEOUS DE SITTER GROUP AND  
EQUATIONS IN A FIVE DIMENSIONAL APPROACH. PART I --U-  
AUTHOR--FUSHCHICH, V.I.

COUNTRY OF INFO--USSR

SOURCE--(ITF-70-4), 1970. 40P. (CONF-690417-25). DEP. DFSTI, 3RD  
CONFERENCE ON AXIOMATICAL FIELD THEORY AND THEORY OF ELEMENTARY  
DATE PUBLISHED-----70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--MASS SPECTRUM, SPIN SYSTEM, MOTION EQUATION, PARTICLE  
DISTRIBUTION, MATHEMATIC TRANSFORMATION, PARTICLE MOTION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--3004/1293

STEP NO--UR/0000/70/000/000/0001/0040

CIRC ACCESSION NO--AT0131748

UNCLASSIFIED

2/2 023

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PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AF0131748

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE IRREDUCIBLE REPRESENTATIONS OF THE TOTAL INHOMOGENEOUS DE SITTER GROUP (1, 4) ARE STUDIED. THE CANONICAL AND NONCANONICAL EQUATIONS OF MOTION INVARIANT WITH RESPECT TO THE GROUP P (1, 4) ARE FOUND. THE EQUATION BY WHICH IT IS POSSIBLE TO OBTAIN THE INCREASING MASS SPECTRUM OF PARTICLES DEPENDING ON SPIN AND ISOSPIN IS SUGGESTED AND, AS AN INDIRECT RESULT, THE EQUATION OF MOTION BEING THE COVARIANT GENERALIZATION OF THE WEYL HAMMER GOOD EQUATION WAS DERIVED FOR A PARTICLE WITH A ZERO MASS. IT IS SHOWN THAT THE SIMPLEST P, T, C INVARIANT EQUATION IN A FIVE DIMENSIONAL APPROACH IS THE EIGHT COMPONENT ONE (6.7). THE CANONICAL TRANSFORMATIONS FOR THE EQUATIONS OF THE DIRAC TYPE ARE CONSIDERED. FACILITY: AKADEMIYA NAUK UKRAINSKOI SSR, KIEF. INSTITUT TEORETICHESKOI FIZIKI.

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1/2 023 UNCLASSIFIED PROCESSING DATE--13NOV70  
TITLE--REPRESENTATIONS OF THE TOTAL INHOMOGENEOUS DE SITTER GROUP AND  
EQUATIONS IN A FIVE DIMENSIONAL APPROACH. PART I -U-  
AUTHOR--FUSHCHICH, V.I.

COUNTRY OF INFO--USSR

SOURCE--(ITF-70-4), 1970. 40P. (CCNF-690417-25). DEP. DEFTI, 3RD  
CONFERENCE ON AXIOMATICAL FIELD THEORY AND THEORY OF ELEMENTARY  
DATE PUBLISHED-----70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--MASS SPECTRUM, SPIN SYSTEM, MOTION EQUATION, PARTICLE  
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DOCUMENT CLASS--UNCLASSIFIED  
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CIRC ACCESSION NO--AT0131748

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PROCESSING DATE--13NOV70

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ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE IRREDUCIBLE REPRESENTATIONS OF THE TOTAL INHOMOGENEOUS DE SITTER GROUP (1, 4) ARE STUDIED. THE CANONICAL AND NONCANONICAL EQUATIONS OF MOTION INVARIANT WITH RESPECT TO THE GROUP P (1, 4) ARE FOUND. THE EQUATION BY WHICH IT IS POSSIBLE TO OBTAIN THE INCREASING MASS SPECTRUM OF PARTICLES DEPENDING ON SPIN AND ISOSPIN IS SUGGESTED AND, AS AN INDIRECT RESULT, THE EQUATION OF MOTION BEING THE COVARIANT GENERALIZATION OF THE WEYL HAMMER GOOD EQUATION WAS DERIVED FOR A PARTICLE WITH A ZERO MASS. IT IS SHOWN THAT THE SIMPLEST P, T, C INVARIANT EQUATION IN A FIVE DIMENSIONAL APPROACH IS THE EIGHT COMPONENT ONE (6.7). THE CANONICAL TRANSFORMATIONS FOR THE EQUATIONS OF THE DIRAC TYPE ARE CONSIDERED. FACILITY: AKADEMIYA NAUK UKRAINSKOI SSR, KIEF. INSTITUT TEORETICHESKOI FIZIKI.

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